



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,604	02/17/2006	Janos Veres	056258-5092	1456
9629 7590 02/17/2009 MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			EXAMINER RALEIGH, DONALD L	
			ART UNIT 2879	PAPER NUMBER
			MAIL DATE 02/17/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/523,604

**Applicant(s)**

VERES ET AL.

**Examiner**

DONALD L. RALEIGH

**Art Unit**

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

The Amendment, filed on November 17, 2008 has been entered and acknowledged by the Examiner.

Claims 1-17 are pending in the instant application.

### **Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1, 3-4, 6 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Sotoyama et al (US PG Pub. No. 2003/0113579).**

Regarding Claim 1, Sotoyama discloses a method of forming an OLED element or display (title) having two or more OLED layers, one of which is an electroluminescent layer (18), which method comprises providing a blocking layer (Paragraph [0110], lines 1-7, teaches that the hole transporting layer also blocks electrons) that prevents conduction and movement of charge into the electroluminescent layer by printing with an ink (Paragraph [0115], lines 1-10, discloses that the hole transporting layer can use a printing method) that prevents conduction and movement of charge into the electroluminescent layer in a desired pattern (printing forms patterns) between two of

the OLED layers (Figure 1 shows the hole transporting layer (16) between the cathode (14) and the light emitting layer (18)), whereby, in use, conduction across the OLED element or display is reduced in the area of the pattern (the hole transporting layer is also an electron blocking layer, i.e. blocks negative charges)(Paragraph [0110], lines 1-7) , wherein the blocking layer is located between the electroluminescent layer (18) and either the anode or cathode (14) of the OLED element or display.

Regarding Claim 3, Sotoyama discloses in Figure 1, a method of forming an OLED element or display wherein the blocking layer (16) is located between an electroluminescent layer (18) and either an anode or cathode (14) of the OLED element or display.

Regarding Claim 4, Sotoyama discloses the method of forming an OLED element or display wherein the blocking layer pattern comprises a multiplicity of discrete points of ink. (Paragraph [0110], lines 1-7, discloses that the hole transporting layer also blocks electrons and paragraph [0115] discloses that the hole transporting layer can be printed). The process of printing inherently contains patterns of discrete points.

Regarding Claim 6, Sotoyama discloses the method of forming an OLED element or display wherein the pattern comprises regions with different densities of the discrete points. (Paragraph [0110], lines 1-7, discloses that the hole transporting layer also blocks electrons and paragraph [0115] discloses that the hole transporting layer can be

printed). Furthermore, one of ordinary skill in the art would recognize that the different densities of discrete points are simply an inherent characteristic of the printing process.

Regarding Claim 16, Sotoyama discloses an OLED element or display obtainable by a method of claim 1 (title).

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sotoyama (579) in view of Pennaz (US Patent No. 6,922,020).**

Regarding Claim 2, Sotoyama fails to exemplify the method of forming an OLED element or display wherein the ink is coloured to increase contrast.

In the same field of endeavor, Pennaz teaches a method of forming an OLED element or display wherein the ink is coloured to increase contrast. (Column 7, lines 12-13 using bluish green and white ink.) in order to emit white light or a desired color (Col.7, lines 5-8)

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the coloured ink as taught by Pennaz into the method of

forming an OLED element as taught by Sotoyama in order to emit white light or a desired color.

**Claims 7-8, 10-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sotoyama (579) in view of Morii (US Patent No. 7,300,686.)**

Regarding Claims 7 and 8, Sotoyama fails to exemplify the method of forming an OLED element or display wherein the ink is insoluble in the medium used to deposit underlying and/or overlying OLED layers.

In the same field of endeavor, Morii teaches in Column 8, lines 25-32 using an insoluble ink and solvent that will not re-dissolve the layer beneath it.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the insoluble ink of Morii into the method of forming an OLED as taught by Sotoyama in order not to re-dissolve the layer beneath it.

Regarding Claim 10, Sotoyama fails to disclose the method of forming an OLED element or display wherein the ink is deposited by a direct printing technique selected from ink-jet printing, screen printing, microcontact printing, stamping, soft lithography or electrophotographic printing using a liquid or solid toner.

In the same field of endeavor, Morii teaches in Column 7, lines 2-6, ink-jet printing of an OLED element (electrode) due to the refinement and ease with which the patterning can be accomplished (Column 1, lines 29-32).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the ink-jet printing as taught by Morii into the method of forming an OLED as taught by Sotoyama due to the refinement and ease with which the patterning can be accomplished.

Regarding Claim 11, Sotoyama fails to exemplify the method of forming an OLED element or display wherein the ink is deposited by ink-jet printing.

In the same field of endeavor, Morii teaches in Column 7, lines 2-6 ink-jet printing of an OLED element (electrode) due to the refinement and ease with which the patterning can be accomplished (Column 1, lines 29-32).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the method of ink-jet printing as taught by Morii into the method of forming an OLED as taught by Sotoyama due to the refinement and ease with which the patterning can be accomplished.

Regarding Claim 14, Sotoyama fails to exemplify the method of forming an OLED element or display wherein the OLED layer(s) to be deposited are independently applied by a coating or printing technique selected from solution-, spin-, spray-, dip-, web-, die- or evaporation coating; electrodeless deposition and ink-jet printing, screen printing, microcontact printing, stamping or soft lithography.

In the same field of endeavor, Morii teaches in Column 7, lines 2-6 ink-jet printing of an OLED element (electrode) due to the refinement and ease with which the patterning can be accomplished (Column 1, lines 29-32).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the ink-jet printing of Morii into the method of forming an OLED as taught by Sotoyama due to the refinement and ease with which the patterning can be accomplished.

**Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sotoyama (579) in view of Morii (686) and further in view of Narang (US Patent No. 6,855,378).**

Regarding 5, Sotoyama fails to exemplify the method of forming an OLED element or display wherein the discrete points of ink are less than about 100  $\mu\text{m}$  in size.

In the same field of endeavor, Narang teaches in Column 2, lines 23-27 the ink printing of particles of 3-50  $\mu\text{m}$  in size in order to be able to print many layers on top of one another (Column 2, lines 18-19). Even though Narang teaches that the conduction characteristics are not excellent, the method is available.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the printing of particles in the above range, as taught by Narang into the method of forming an OLED as taught by Sotoyama in order to be able to print many layers on top of one another.

**Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sotoyama (579) in view of Hyman (US PG Pub. No. 2003/0035917).**

Regarding Claim 9, Sotoyama fails to exemplify the method of forming an OLED element or display wherein the ink further comprises a colorant, a polymeric binder and/or functional additives.

Hyman teaches in Paragraph [0267], line 5 an OLED element wherein the ink (Paragraph [0268] line 10 (ink-jet printing)) further comprises a colorant, a polymeric binder and/or functional additives (Paragraph [0268], lines 1-3 (polymer and colorant) in order to create desired aesthetic and/or utilitarian effects in inventive images.(Paragraph [0266], lines 1-4).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the colorant and polymeric binder as taught by Hyman into the method of forming an OLED as taught by Sotoyama in order to create desired aesthetic and/or utilitarian effects in inventive images.

**Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sotoyama (579) in view of Murasko et al (US PG Pub. No. 2003/0015962).**

Regarding Claim 12, Sotoyama fails to exemplify the method of forming an OLED element or display wherein the ink blocking layer is thicker than the OLED layer(s) subsequently deposited onto it.

In the same field of endeavor, Murasko teaches in an OLED (Paragraph [0039](Claim 4) wherein the ink block layer (Paragraph [0017] teaches printing (ink) of a blocking layer (dielectric) is thicker than (Paragraph [0031], lines 12-13 (100  $\mu\text{m}$ )) the OLED layer(s) subsequently deposited onto it. (Paragraph [0034] lines 9-11 teaches

that an electrode layer (105) is printed subsequently to the dielectric layer and Paragraph [0035], lines 13-16 teaches that the thickness of this layer (105) may be  $2 \times 10^{-4}$  inches ( $5.08 \mu\text{m}$ ) which is thinner than the dielectric layer.

Although the ink blocking layer of Murasko is not specified as a charge blocking layer, it would actually block charges as a dielectric.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the thicker blocking layer of Murasko into the method of fabricating an OLED of Sotoyama in order to provide additional charge blocking capabilities.

Regarding Claim 13, Sotoyama fails to exemplify the method of forming an OLED element or display wherein the ink blocking layer thickness is from 100 nm to 100  $\mu\text{m}$  thick.

In the same field of endeavor, Murasko teaches where the ink (Paragraph [0017] teaches printing (ink)) blocking layer (dielectric (103), Paragraph [0031], line 12) thickness is from 100 nm to 100  $\mu\text{m}$  thick (Para. [0031], line 13, .1 $\mu\text{m}$  to 100  $\mu\text{m}$ ) which falls within above range.

Although the ink blocking layer of Murasko is not specified as a charge blocking layer, it would actually block charges, as a dielectric.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the blocking layer thickness range, as taught by Murasko, into

the method of forming an OLED as taught by Sotoyama, in order to allow flexibility in the fabrication of the OLED layers.

**Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sotoyama (579) in view of Jagannathan (US PG Pub. No. 2003/0030706).**

Regarding Claim 15, Sotoyama fails to exemplify the method of forming an OLED element or display wherein the wetting of the ink includes a surface treatment of the layer on which the ink is deposited.

Jagannathan teaches in Paragraph [0004] lines 1-6 wherein, during ink -jet printing (Paragraph [0003], line 1) the surface of the image forming layer should be wetted so there is no coalescence of adjacent dots.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the wetting of the ink surface as taught by Jagannathan into the method of forming an OLED as taught by Sotoyama in order that there be no coalescence of adjacent dots.

**Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sotoyama (579) in view of Hanson (US PG Pub. No. 2003/0035972).**

Regarding Claim 17, Sotoyama fails to exemplify the OLED display which, in use, produces a pseudo 3-D image.

Hanson teaches an OLED display (Paragraph [0503], line 11 (electroluminescent) light source) using ink printing ( Paragraph [0458])

which in use, produces a pseudo 3-D image, (Paragraph [0411], lines 1-3) that could be used as a decorative backing for an aquarium. (Paragraph [0411], last two lines).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the color shifting inks, as taught by Hanson, into the method of forming an OLED as taught by Sotoyama in order to create a "3-D" effect that could be used as a decorative backing for an aquarium.

### ***Response to Arguments***

Applicant's arguments with respect to claim 1 have been considered but are not persuasive. Applicant argues that Sotoyama does not teach a patterned blocking layer that prevents conduction and movement of charge into the EL layer. Examiner disagrees. Sotoyama teaches an electron blocking layer that prevents conduction (the electron is needed for conduction) and movement of charge (the charge of the electron) into the EL layer.

### **Conclusion**

Applicant's arguments are not persuasive, therefore:

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DONALD L. RALEIGH whose telephone number is (571)270-3407. The examiner can normally be reached on Monday-Friday 7:30AM to 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter J Macchiarolo/  
Primary Examiner, Art Unit 2879

/Donald L Raleigh/  
Examiner, Art Unit 2879